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AUTHOR Zacharias, Margaret King; Mathis, Claude
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ABSTRACT

As part of a comprehensive review and analysis of research about the division of labor in higher education, a university library computer system was used to search the ERIC Index, Sociological Abstracts, and Psychological Abstracts. The purpose of these experimental searches was to determine whether online access to computer-held social science data would improve the breadth and quality of literature available for analysis. Each database was restricted to the years 1968-80 and the English language. Final output resulted in 39 citations from Psychological Abstracts, 45 from ERIC, and 176 Sociological Abstracts; however, few were actually relevant to the research problem. Attempts to clarify the research problem by specifying such individual theoretical perspectives as self-concept and role theory did produce useful references within each theoretical perspective. Although computer methods for literature reviews can help researchers utilize large amounts of primary source material, professional networks of scholars must remain responsible for the organization of knowledge and address such issues as criteria for inclusion in databases, what retrieval methods are best, who will pay for online services, and how such services should be managed. (JB)

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COMPUTER SEARCHES OF THE LITERATURE IN HIGHER EDUCATION

Margaret King Zacharias
Northwestern University

Claude Mathis
Northwestern University

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B. Claude Mathis

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COMPUTER SEARCHES OF THE LITERATURE IN HIGHER EDUCATION

Margaret King Zacharias and B. Claude Mathis
Northwestern University

Introduction

A strong tradition of anthropological theory (see Harris, 1968) argues that new tools engender entirely new forms of culture. As American society and academic organizations adapt in response to electronic technology, computers are expected to improve information flow among scholars and contribute to the advancement of knowledge. But hands-on use of computer tools for literature search illuminates a number of logistical problems in existing systems. These include accessing the data base, translating research categories into computer literature codes, clarifying concepts on-line to manage the search, and determining the conceptual fit among literature output items.

Methods

In a comprehensive review and analysis of research about the division of labor in higher education (Zacharias, 1983), a university library computer system was used to search the ERIC Index, Sociological Abstracts, and Psychological Abstracts. The purpose of these experimental searches was to determine whether on-line access to computer-held social science data bases would improve the breadth and quality of literature available for analysis. Traditional literature search tools --

graduate coursework, professional networks, association meetings, journal subscriptions, publisher's announcements, and serendipity -- were also used.

Initial input code words, based on the conceptual framework, were selected from manual indexes provided by data system holders. The code words varied from data base to data base. It was not possible to specify the substantive focus of the study, the academic professions, directly. In Psychological Abstracts, for example, the required input was "college teachers or faculty or professors or academic with professions or university or college." Sociological Abstracts required a series of question inputs: "college with teacher?" "college with faculty?" "university with faculty?" "professor?" and "academic with profession?" Each of these separate inputs yielded a different sample of literature, although there was some overlap.

Once the initial input keywords were clarified, the computer generated a number of abstracts available in the data base on the research topic. Initial input of the above references for academic professions yielded 28,754 items in Psychological Abstracts. 18,029 items were produced from Sociological Abstracts. Printouts of sample abstracts presented clues for restricting the input categories on-line. In Sociological Abstracts, for example, it was necessary to specify that the search topic was NOT "student," "teaching methods," "school role," "childhood," "children," "curriculum," "educational methods," or "program descriptions," since the higher education focus of the initial

input categories had not eliminated abstracts of articles about elementary and secondary schools.

Each data base was restricted to the years 1968 to 1980, and the English language, prior to initial input. Exclusion of dissertations and research grant reports to federal funding agencies, that had not been published elsewhere, along with topic restrictions during the on-line course of each search, resulted in a final output of 39 Psychological Abstracts, 45 ERIC Abstracts, and 176 Sociological Abstracts. Very few of these were actually relevant to the research problem and some were simply ridiculous — "Iranian Perceptions of the Reza Shah, Presidents Nixon and Johnson, and the Ideal Self," for example.

Attempts to clarify the research problem by specifying individual theoretical perspectives, like self-concept, and role theory, may account for such anomalies, and did produce useful references within each theoretical perspective. Queries to combine the references for academic professions with different types of research methods produced only 4 abstracts, each of which turned out to be reporting the results of classroom experiments using college students as subjects.

Results

The computer searches cost nearly $200. They ultimately yielded 10 direct citations (of 166 total) in the comprehensive literature review. This literature, that otherwise would not have been identified for inclusion, did contribute significantly to the breadth and quality of the research synthesis. An equivalent amount of research time spent

in a manual search of the Social Science Index for the years 1968 to 1980, under the topic of professors in colleges and universities, yielded 50 useful references and 10 direct citations in the comprehensive review. The Social Science Index search was free.

The most important works in the field, and the great preponderance of the literature that was ultimately reviewed, were obtained through professional networks -- coursework in higher education, correspondence with researchers in the field, and the meetings and journals of professional associations. Serendipity in these endeavors provided nearly all of the literature on professional development of scholars, the best methodological discussions about research using the academic professions as a study population, and the broadest representation of theoretical perspectives that scholars have used to think about themselves and their work. None of this literature was accessed through computer search tools.

Thus, the use of computer tools for literature search did not in any way diminish the researchers' responsibility for conceptual clarity and methodological care in the collection of data. But it did highlight the problems of proliferation of information: lack of conceptual connections among different pieces of research, inadequate procedures to sort relevant from irrelevant literature, and the impossibility of including all available data in a literature review.

Discussion

The three computer-held data bases examined in this study, and the literature about the division of labor among academic professionals in higher education, lack anything approaching a shared conceptual language. In order for computers to evolve into a network for knowledge sharing among scholars, the important literature in a field must exist in a computer data base and scholars working in the field must be able to access that literature. Computer methods for literature review can help us utilize large amounts of primary resource data only if professional networks of scholars remain responsible for the organization of knowledge.

This case report is intended to share a hands-on experience with other researchers in higher education. The actual use of computer tools for literature review identifies problems as they come up. Solution of these problems one at a time can contribute to successful technological adaptation within higher education.

D. J. Boorstin, the Librarian of Congress, has pointed out that information is not the same as knowledge. It might be argued that an era of growth in higher education has produced a great deal of information but very little knowledge. The end of an era of growth and the need to focus on the essentials provide an opportunity to reconsider the organization of knowledge and to restrain the

overproduction of disconnected pieces of information.

Experience in this study suggests that the higher education research community would benefit from the design of its own computer data base, with holdings and access codes developed by scholars in the field. The comprehensive literature review on which this paper is based identified eight distinct theoretical paradigms and six types of research methods that have been applied to different research problems about the division of labor in higher education. These categories -- theoretical perspective and methodological strategy -- might provide an opening focus for dialogue within the research community about how a higher education data base could be organized.

But this agenda for professional development practice leaves more questions asked than answered. First, how do we decide what goes into the data base? Should books, survey materials, doctoral dissertations, be included along with journal articles and monographs? Should indexes already held by other data systems be incorporated into the holdings or simply be available for access through the higher education system?

And how do we find it again? There is no paucity of abstract and index data in the systems that already exist. Since this study was conducted, College Personnel Abstracts has with volume 20 expanded its focus to become Higher Education Abstracts, and Educational Testing Service has begun indexing articles published in higher education journals. There is a complete lack of an adequate universal cataloguing

system that would make it possible for scholars to identify relevant works in their fields or communicate with other scholars working on the same research problems.

A third question is, who pays? At present, university library cardholders have access to the services of trained experts in the various data bases and on-line computer time, at cost. Access to at least one of the data bases examined in this study required transfer through a privately owned industrial computer system. If researchers are to pay these expenses out-of-pocket, consolidation of the data base for efficiency and organization to insure conceptual clarity as well as methodological integrity are goals that might be sought by the higher education community. In the future, personal computer access to a single data base and computer/video conferencing with colleagues might be desirable services to foster communication in the field. Electronic data systems might join print media as free services provided by university library systems, or be provided as membership services by professional organizations.

Finally, how do we get there from here? Computer data bases for literature search in higher education research are already burgeoning. Without intentional planning, systematic mutual adaptations between the new technology and the higher education research community will not be possible. Division J of the American Educational Research Association, the Association for the Study of Higher Education, and the American Association for Higher Education are three organizations representing a constituency of higher education

researchers. A committee composed of representatives of each of these groups might be formed to examine each of the scientific and logistical issues raised in this paper. Subcommittees with expertise in the substantive concerns of the discipline and in computer methods, as well as consultants representing library cataloguing systems and industrial providers of software and hardware might be appropriate strategies. But the governing goal of these efforts must be to reduce overlap of function while increasing disciplinary synthesis in higher education research. The diplomacy and management talent required to coordinate the already existing sources of data should not be underestimated. The quality of research in higher education, and its impact on the evolution of colleges, universities, and academic careers in the next century will almost certainly be determined by the quality of attention paid to these issues of technological adaptation today.

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